MONTANA
Natural Heritage Program

A program of the
Natural Resource Information System,
Montana State Library
in partnership with
The Nature Conservancy

. optimo·locus .

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In This Issue:

New On Our Website:

http://nhp.nris.state.mt.us/

Montana 2003 Animal Species of Concern

Montana 2003 Plant Species of Concern

Sensitive Plant Species in Weed Management Areas on the Helena National Forest - Final Report, December 2002

Globally Significant Plants in Southeastern Big Horn and Southwestern Rosebud Counties, Montana, February 2003

Plant and Animal Resources and Ecological Condition of the Hanging Woman Basin in Big Horn County, Montana and Sheridan County Wyoming, February 2003

Kootenai National Forest Peatlands: Description and Effects of Forest Management, May 2003

Site Descriptions of High-Quality Wetlands Derived from Existing Literature Sources, June 2003

Status and Conservation Management of Terrestrial Mollusks of Special Concern in Montana, June 2003

Statewide "POD" Project Launched

Although the Heritage Program has always focused on species of conservation concern, in the early 1990s, Program Zoologist Jim Reichel (1947 to 1997), recognized the importance of tracking reported observations for a broader range of wildlife species. This led to the development of the Point Observation Database, called "POD", to record *all* reported observations for not only Species of Concern, but also species in vulnerable or poorly-known groups such as reptiles, amphibians, and small mammals. The POD database contains locations, collector/observer name, date, and type of observation (i.e. breeding, non-breeding).

Earlier this year, the Natural Heritage Program (NHP) and Montana Fish, Wildlife & Parks (FWP) began to expand the POD dataset into a comprehensive statewide vertebrate observation database. To catalyze this effort, FWP has hired three temporary staff to comb through publications and reports, databases, files, and other information sources. Their efforts will emphasize all vertebrates, not just those considered to be Species of Concern.

The expanded POD will serve as the foundation for the state's Comprehensive Fish & Wildlife Conservation Plan. This plan, which must be developed by October 2005, requires strong data to support its recommendations. FWP and NHP will jointly manage the POD database.

This cooperative venture is unique in the nation and an innovative and cost-effective venture for Montana. Within the Natural Heritage Network, Montana is on the forefront of expanding our databases beyond Species of Concern to address those that are potentially vulnerable or for which there is insufficient data to confidently evaluate status. MTNHP's more detailed data collection and analysis will continue to focus on Species of Concern. However, having reliable data on a broader range of animal species will allow NHP and FWP to more accurately identify Species of Concern – as well as those that do not appear to be declining or at risk. POD also provides an efficient means of maintaining data on species that are no longer considered at risk.

The extensive wildlife information in POD will eventually be available for state, federal, local, tribal, and private users to assist in planning, permitting, management, conservation, and research.

- Whitney Weber / Steve Carson

Legislative Budget Results for the 2004-2005 Biennium

Thanks to an outpouring of support from library professionals, patrons, and partners around the state, some of the worst budget cuts proposed for the State Library were averted in the 2003 Legislative session. The final budget that was passed was close to the original level of cuts proposed in the Governor's budget – difficult to absorb, but fortunately not devastating. Cuts to NRIS totaled about $75,000, around half of which will directly impact the Natural Heritage Program contract. Most of these cuts came from General Fund dollars that the agency receives, although NRIS also saw a reduction in funds from the RIT (Resource Indemnity Trust) Fund.

- Sue Crispin

2003 Plant List Available

The 2003 Plant Species of Concern List can be viewed and downloaded at our website (http://nhp.nris.state.mt.us/reports.htm). To request a copy, contact Martin Miller at martinm@state.mt.us Suggestions or comments can be directed to:

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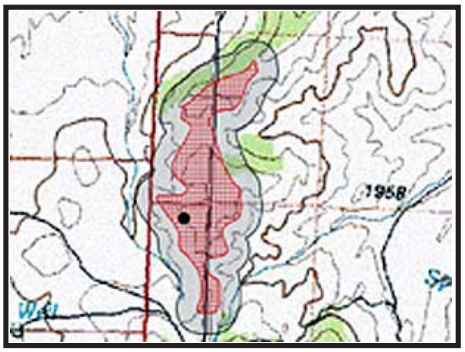
Optimolocus, pronounced *"op-tih-moe-**lo**-cus,"* from Latin *optimo* - best and *locus* - place; after *Enallagma optimolocus*, a damselfly found only in Montana.

BIOTICS... Debuts at the Natural Heritage Program

The Montana Natural Heritage Program serves as the clearinghouse for information on Montana's native species and habitats, emphasizing those of conservation concern. In order to fulfill that role, we need a sophisticated data management system to store and retrieve complex biological information.

For the past ten years, MTNHP used a system called BCD—the Biological and Conservation Database. This system was an innovative and award-winning database for its time, but over the years it had become quite outdated and limiting; we needed a more robust and spatially-enabled system to meet growing demands for our information. In response, NatureServe (the international affiliate of Natural Heritage Programs) spent the last five years developing such a system. Called BIOTICS, this new system is built upon geographic information system (GIS) and Oracle database technologies. We recently completed installation of BIOTICS in Montana after more than a year of preparation and conversion efforts.

BIOTICS has two basic components: the location of the biological feature and information about the feature. The locational information includes the extent and shape of a population or occupied habitat, as well as the degree of uncertainty (or margin of error). BIOTICS can also manage precise data on multiple observations or subpopulations that comprise a population or habitat area (what we call an "Element Occurrence"). The result is a more accurate and realistic depiction of biological features and the capability to manage observational data collected over time – a first step toward data that can be used to monitor and analyze trends. This detailed spatial information is stored as GIS data layers and is thus readily available for viewing, mapping, and analysis.



A population of *Lesquerella pulchella* (Beautiful bladderpod), shown by the former point location in BCD, contrasted with the field-mapped population boundary (red) and uncertainty buffer (gray) in the BIOTICS system.

Information about the observations and Element Occurrences is stored in an Oracle database, linked directly to the spatial data. The Oracle database has a much greater capacity for detailed information than did BCD. It also provides an improved ability to track taxonomic complexity (e.g., different names for a given species or ecological community), as well as greater flexibility and performance. Its ability to manage data on individual observations also provides a direct bridge to our Point Observation Database, which contains data on a broad spectrum of vertebrate animals – not just those ranked as Species of Concern (see "POD" Project article on page 1). This feature facilitates tracking information on species no longer considered Species of Concern, as well as those for which there is insufficient data to determine status.

All in all, BIOTICS will enable the Heritage Program to better integrate and provide access to the wealth of biological information that we manage.

- Allan Cox

Harlequin Ducks in Montana

Harlequin Ducks are one of Montana's least know waterfowl. These colorful yet cryptic birds winter on the pacific coast from Oregon north and breed along fast flowing inland mountain streams and coastal waters.

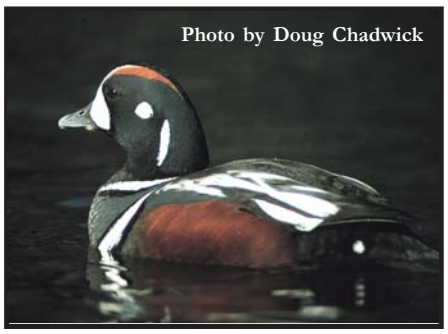
Breeding habitat for Harlequin Ducks in Montana (Wounded Buck Creek, Flathead County).

Harlequin ducks have declined throughout their range at both large and small scales, and nowhere do they breed in large numbers. They appear to be somewhat sensitive to disturbance on the breeding grounds and reproductive success is generally quite low. The population of Harlequins on the east coast of North America was petitioned for listing under the Endangered Species Act in 1995. Recognition of these factors and limited knowledge of Harlequins in Montana has led Heritage Program zoologists to look more closely at distribution and population parameters, to better understand these ducks and their needs.

We initiated Harlequin Duck surveys in 1988 with funding from several National Forests. This program was expanded to include banding and marking of individual birds throughout the state in 1991. Since then nearly 400 individual Harlequin Ducks have been banded by our zoologists. At the time, this was the largest marked "population" from the inland breeding grounds. Cooperators in the banding efforts included Glacier National Park and Asarco Inc. We gained valuable information from that effort: marked Harlequins were observed wintering in Washington and British Columbia, and marked birds were documented moving between breeding streams.

Since 1999 the Heritage Program has not conducted any surveys for Harlequins nor have we marked any birds due to staff changes and lack of funding. Some surveys have been conducted by various national forests however. Resumption of this effort has become a high priority, because every year without surveys was another year of lost data from our marked birds. We're pleased that we'll be able to resume survey and banding efforts with funding from Montana Fish, Wildlife and Parks and the Kootenai National Forest. We look forward to finding some of our marked birds on their breeding streams and adding to our knowledge of the habits of this tough and enigmatic little duck.

- John Carlson



Male Harlequin Duck on a Montana mountain stream.

Observations Wanted!!

Please send in your records for any Montana Species of Concern you observe or collect during the upcoming 2003 season so we can update the MTNHP databases. Field forms can be downloaded for use from our website (http://nhp.nris.state.mt.us/). THANKS!

New Staff at Montana Heritage

This spring, we welcomed three new staff members. Dr. Greg Kudray has joined us as Senior Ecologist. He brings a wealth of experience as a landscape ecologist, having worked closely with state and federal agencies, The Nature Conservancy, local land trusts, and Native Tribes. Greg comes to us from Michigan's Upper Peninsula, where he earned his Ph.D. from Michigan Tech and worked extensively as a consulting ecologist on wetland classification/mapping and a wide variety of other projects.

Susan Lenard is our new Zoology Research Assistant. She joined MTNHP early this Spring. Susan has worked extensively in Montana and elsewhere, including Wyoming, Arizona, Pennsylvania, as well as Indonesia. She has worked as a Biologist for a private consulting firm and as a Wildlife Specialist for Montana Audubon. She brings many years of Zoological experience to the program.

Elizabeth Crowe has joined us for the summer and fall to lead our ecological inventory project on the Upper Missouri River Breaks National Monument. Elizabeth is a plant ecologist with over a decade of experience in the Northwest and a focus on wetland/riparian ecology and classification. Much of her experience is with the Forest Service in eastern and central Oregon, and we were fortunate that she was relocating to Montana just in time to come on board for this project.

2003 Animal List Available

The 2003 Animal Species of Concern List can be downloaded from our website (http://nhp.nris.state.mt.us/reports.htm). To request a copy, contact Martin Miller at martinm@state.mt.us. Suggestions can be directed to:

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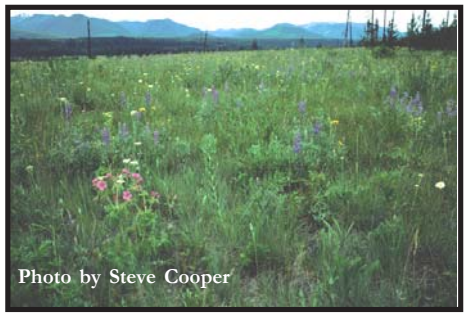
Glacier Park Vegetation Mapping

A casual visitor driving from west to east across Glacier National Park might think that the park consists largely of coniferous forest, interspersed with alpine meadows and deciduous shrublands. In reality, the Park has a much higher diversity of environments and vegetation. At its western extreme in the Lake McDonald drainage lie the easternmost forests of western red cedar and western hemlock in the US – types that are more typical of maritime climates. East of the Continental Divide, the Park experiences more Chinook winds than any other place in North America. These warm, dry downslope winds combine with a rain-shadow effect to significantly lower the treeline, causing alpine-like vegetation to extend thousands of feet lower in some places than it does west of the Divide. The Park also encompasses exemplary areas of rough fescue grassland and mountain big sagebrush, not to mention vast shrubfields that serve as prime habitat for ungulate populations.



Lush, species-rich forb communities develop first following stand-replacing fires (North Fork Flathead Valley, Flathead County).

Over the past two years, MTNHP Ecologists have been participating in a project to map the diverse vegetation of Glacier and Waterton National Parks, in partnership with the National Park Service, Canadian Park Service, USGS-Biological Resources Division, NatureServe, and several private contractors. This effort is part of a larger initiative to map the vegetation of all US National Parks and Monuments using the new National Vegetation Classification (NVC), which was spearheaded by The Nature Conservancy in collaboration with the Ecological Society of America and several other agencies. The goal of the NVC is to create a standardized vegetation classification that will promote cooperation among agencies and the private sector in resource management and planning. This contrasts with the past approach in which each agency developed its own system, resulting in incompatibilities not only between agencies, but sometimes even within a single agency across regions.

To date, the Glacier Park mapping project has identified more than 200 relatively distinct plant communities in the Park. These have been aggregated to create about 30 vegetation mapping units (vegetation types that can be recognized from high-resolution aerial photo-

Con't on Page 4

2003 Field Projects

Inventories and Assessments of:
(*Project partners are noted in parentheses*)

- ***Silene Spaldingii*** (*USFWS*)
- **Linear-leaved moonwort** (*USFWS*)
- **Globally Rare Plants in south west Montana** (*BLM*)
- **Peatlands of the Kootenai NF** (*USFS*)
- **Wetlands of the Helena NF, Lincoln District** (*USFS*)
- **Bat species in south-central Montana** (*BLM*)
- **Black-tailed prairie dog colonies on BLM lands** (*BLM*)
- **Missouri River Breaks National Monument** (*BLM*)
- **Vegetation communities on Rangeland Sites** (*BLM, NRCS, USFS*)
- **Pygmy rabbits in southwest Montana** (*BLM*)
- **Wetland and riparian habitats in northeastern Montana** (*BLM*)
- **Cour d'Alene salamanders, Harlequin Ducks and Black Swifts** (*MT-FWP, USFS*)

Habitat & Population Studies:

- **Grassland bird diversity and habitats in northeast Montana** (*BLM, MT-FWP, TNC*)
- **Bat use of highway bridge structures in south-central Montana** (*MDT*)
- **Sagebrush succession and small mammal diversity/habitats** (*BLM, MT-FWP*)

2003 Species of Concern Publications

Updated 2003 Plant and Animal Species of Concern publications have now been completed and are available from our website (http://nhp.nris.state.mt.us/reports.htm) as well as in hard-copy format (on request). These lists represent the best current scientific assessment of status for over 500 of Montana's animals and plants thought to be biologically at-risk.

For describing biological status, the Heritage Program uses a standardized numerical ranking system (1-5), with ranks assigned at both the Global (rangewide) and State levels. This two-tiered approach helps distinguish species that are widespread but rare or declining in Montana (e.g., at the edge of their range), from those that have declined throughout their range or are restricted to this region. State-level status ranks for Montana are based on information in the MTNHP databases and input from knowledgeable persons around the state. For animal species, there is a formal working group (the Montana Animal Species of Concern Committee) that assigns status ranks after reviewing available information and recommendations. The Animals Species of Concern publication is produced jointly with Montana Fish, Wildlife & Parks.

In Montana, we refer to Species of Concern (SOC) as those animals with state ranks of S1-S3, and plants with ranks of S1-S2. Species with ranks falling one-step below the cutoff for Species of Concern (S4 for animals and S3 for plants) may be treated as Species of Potential Concern or as Species on Review (animals) depending on population trends. For non-vascular plants (mosses and lichens), we publish preliminary status ranks, but do not include them as Species of Concern, because their distribution and abundance are so poorly documented. This year, we also added a category for animals that are "Extirpated in Montana" – e.g., the woodland caribou.

Natural Heritage status ranks are strictly scientific assessments that are intended to reflect only a species biological status. Heritage ranks are *not* legal or administrative designations, and carry no governmental authority. They are provided to help resource managers, planners, businesses and organizations identify species that may be worthy of particular attention in order to avoid further declines, formal listings, or costly recovery measures. Ideally, if Species of Concern are identified early enough and managed effectively, needless losses can be avoided and populations can be maintained or even restored to healthier levels.

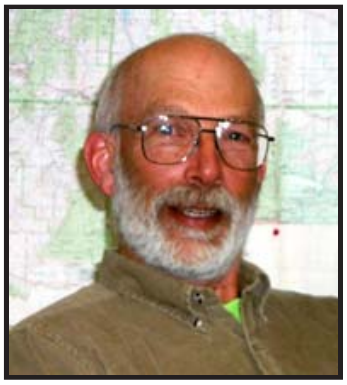
One advantage of the Natural Heritage status ranks is that they can be updated whenever new information becomes available that indicates a species to be either more secure or at higher risk than previously thought. Typically, identifying an animal or plant as a Species of Concern focuses greater attention on it, and the result is a wave of new information – sometimes documenting that it is more common than records may have indicated. Such has been the case with fourteen plant species that were once candidates for federal listing; when we launched concerted surveys and assembled all available information, they turned out to be much less rare than previously thought, and were dropped from further consideration for listing.

This year, in addition to updating species' statuses, we also reviewed and updated the language of our rank definitions in the Plant SOC publication. The terms "critically imperiled," "imperiled," and "rare" were replaced with "at high risk," "at risk," and "vulnerable" to better reflect the biological nature of the ranks and to avoid any perceived connection with the legal designations of "endangered" and "threatened." The revised definitions also incorporate the criteria used to determine status ranks — such as declining populations and/or habitat. These revisions will also be incorporated into future Animal SOC lists.

Overall, the 2003 Species of Concern lists added eight species (six animals and two plants) and dropped nine (two animals and seven plants). We always welcome new species information, comments, and suggestions about the Species of Concern lists.

- Sue Crispin

A Retirement Salute



Cedron Jones retired from The Nature Conservancy in May after 18 years with the Montana Natural Heritage Program. He began as a volunteer with MTNHP in late 1985 and was involved in most aspects of GIS and data management. One of Cedron's biggest accomplishments was completing the statewide Stewardship map of public and conservation lands -- probably our single most requested product. We will certainly miss him. Good Luck Cedron!!

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Find email addresses on the Web under "Staff Contacts"

GNP Continued from Page 3

graphs). One of the reasons that so many community types were identified is that the NVC classification recognizes successional communities in addition to the "climax" or "potential" vegetation communities, which were the focus of many earlier classifications. The project is slated for completion in 2004. All maps will be in GIS format and thus easily updated over time. These vegetation maps will be extremely useful for managing resources ranging from wildlife to weeds. When digitally overlaid with a fuels map, they will also be valuable in identifying where fire suppression efforts should be concentrated versus areas where a let-burn policy is appropriate.

- Steve Cooper